

Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

AMENDMENTS TO THE CLAIMS

1. (presently amended) An ether-capped poly(oxyalkylated) alcohol having the formula:



wherein, R is selected from the group consisting of linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic hydrocarbon radicals having from about 1 to about 30 carbon atoms; R^1 may be the same or different, and is independently selected from the group consisting of branched or linear C_2 to C_7 alkylene in any given molecule; R^2 is selected from the group consisting of:

- (i) a 4 to 8 membered substituted, or unsubstituted heterocyclic ring containing from 1 to 3 hetero atoms;
- (ii) a 7 to 13 membered substituted, or unsubstituted polycyclic ring;
- (iii) a hydrocarbon of the formula:



wherein, y is an integer from 1 to 7, X is selected from the group consisting of:

- (A) a 4 to 8 membered substituted, or unsubstituted, partially unsaturated cyclic hydrocarbon radical; or
- (B) a 4, 5, 7 or 8 membered substituted or unsubstituted aromatic hydrocarbon radical;
- (C) a 6 membered aromatic hydrocarbon radical wherein R is a linear or branched saturated or unsaturated, C_9 to C_{30} aliphatic hydrocarbon radical;
- (D) a substituted or unsubstituted polycyclic aromatic hydrocarbon; and
- (iv) a hydrocarbon radical of the formula:



wherein R^3 is selected from the group consisting of:

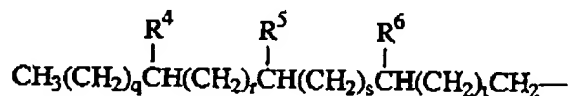
- (A) linear or branched, saturated or unsaturated, ~~substituted or unsubstituted~~, aliphatic or aromatic hydrocarbon radical ~~[[s]]~~ having from about ~~[[1]]~~ 2 to about 30 carbon atoms;
- (B) , provided that when R^3 is methyl, wherein R is branched saturated or unsaturated, aliphatic hydrocarbon radical having from 1 to 4 carbon atoms;
- (C) a substituted or unsubstituted aromatic hydrocarbon radical having from about 15 to about 30 carbon atoms;

wherein x is a number from 1 to about 30.

Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

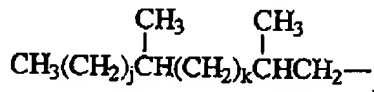
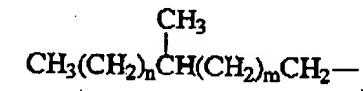
2. (original) The compound as claimed in Claim 1 wherein R is a linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic hydrocarbon radical having from about 1 to about 20 carbon atoms.
3. (original) The compound as claimed in Claim 2 wherein R is a linear or branched, saturated, aliphatic hydrocarbon radicals having from about 4 to about 18 carbon atoms.

4. (original) The compound as claimed in Claim 1 wherein R has the formula:



wherein R^4 , R^5 , and R^6 are each independently selected from hydrogen, C_1 - C_3 alkyl, and mixtures thereof, provided that R^4 , R^5 , and R^6 are not all hydrogen and, when t is 0, at least R^4 or R^5 is not hydrogen; q , r , s , t are each independently integers from 0 to 13.

5. (original) The compound as claimed in Claim 4 wherein R has the formula:



wherein n , m , j and k are each independently integers from 0 to 13.

6. (original) The compound as claimed in Claim 1 wherein R^2 is a hydrocarbon radical of the formula:



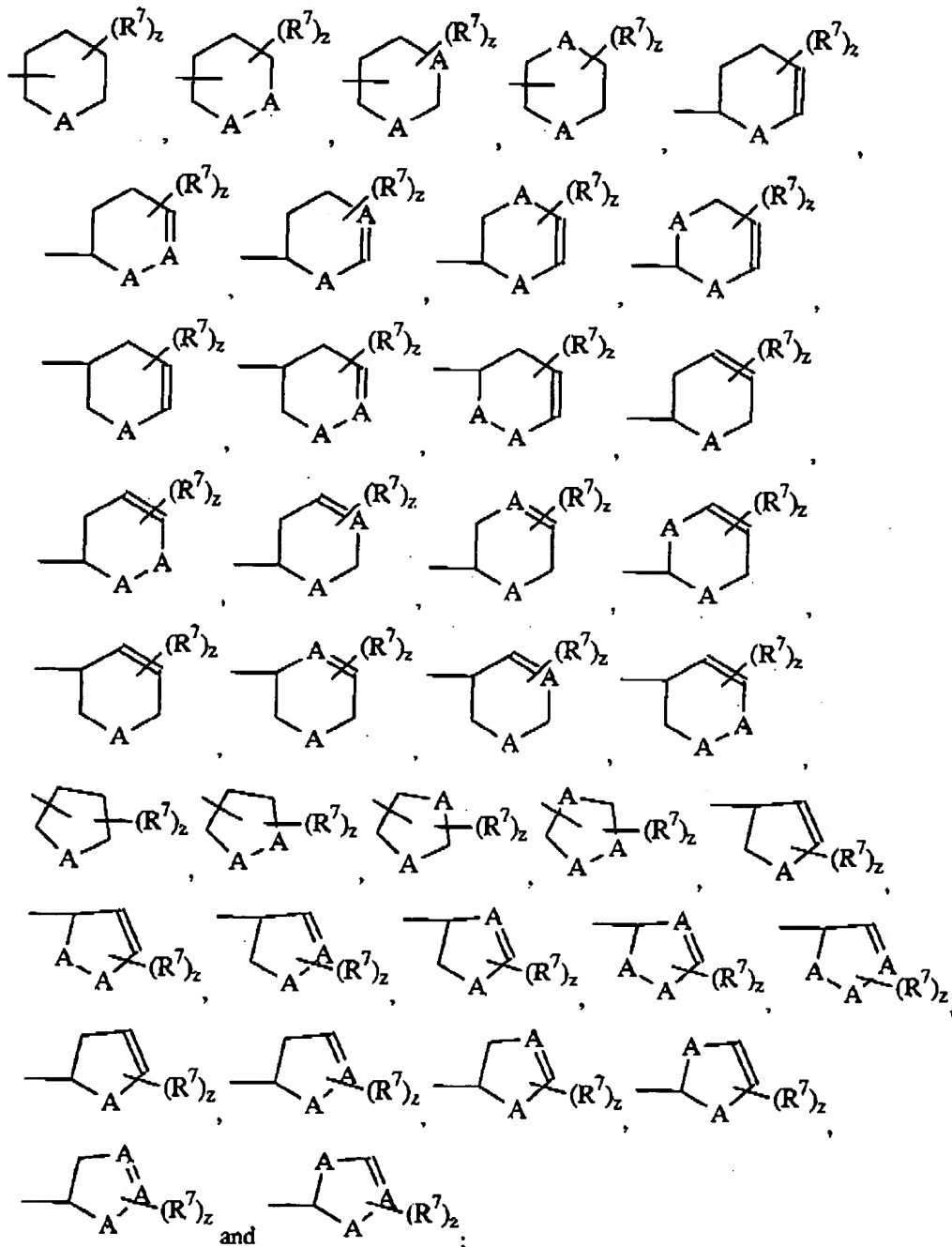
wherein R^3 is defined as above.

7. (original) The compound as claimed in Claim 6 wherein R^3 is CH_3CH_2 .

8. (presently amended) The compound as claimed in Claim 1 wherein R^2 is a 4 to 8 member substituted, or unsubstituted heterocyclic ring containing from 1 to 3 hetero atoms.

Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amtd. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

9. (presently amended) The compound as claimed in Claim 8 wherein said heterocycle is selected from the group consisting of:

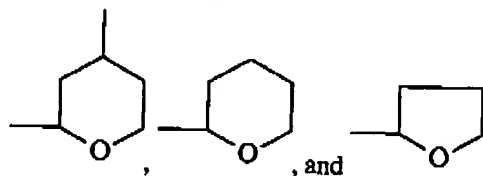


wherein each R^7 is independently selected from the group consisting of hydrogen, linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic hydrocarbon radical having from about 1 to about 10 carbon atoms, or R^7 is a saturated or unsaturated, substituted

Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

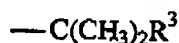
or unsubstituted, alicyclic or aromatic hydrocarbon or alkoxy radical having, from about 1 to about 10 carbon atoms, which is fused to the heterocyclic ring; each A is independently selected from the group consisting of O, and $N(R^8)_a$, wherein R^8 is independently selected from the group consisting of hydrogen, linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic hydrocarbon radical having from about 1 to about 10 carbon atoms, and a is either 0 or 1; provided that any A that is bound by a double bond must be $N(R^8)_a$, wherein a = 0; z is an integer from 1 to 3.

10. (original) The compound as claimed in Claim 9 wherein said heterocycle is selected from the group consisting of:



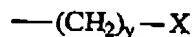
11. (original) The compound as claimed in Claim 1 wherein R^2 is a 7 to 13 membered substituted, or unsubstituted polycyclic ring.

12. (presently amended) The compound as claimed in Claim 1 wherein R is selected from the group consisting of linear or branched, aliphatic hydrocarbon radicals having from about 7 to about 11 carbon atoms; R^1 is ethyl; x is a number from 6 to about 10; and R^2 is selected from the group consisting of a hydrocarbon radical of the formula:



wherein R^3 is selected from the group consisting of linear or branched, aliphatic radicals having from about $[(2)]$ 3 to about 5 carbon atoms.

13. (presently amended) The compound as claimed in Claim 1 wherein R^2 is a hydrocarbon of the formula:



wherein, y is an integer from 1 to 7; and X is

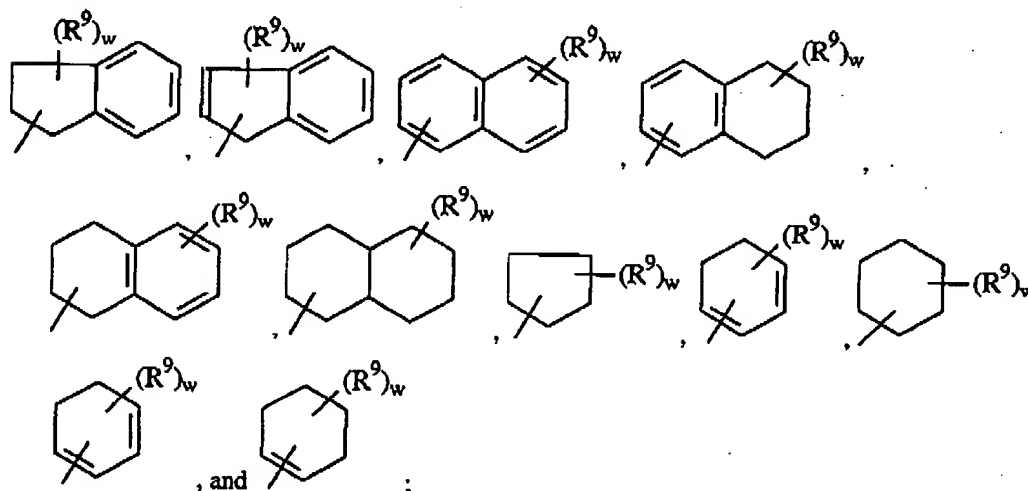
- (a) a 4 to 8 membered substituted, or unsubstituted, partially unsaturated cyclic or aromatic hydrocarbon radical;
 (b) a 4, 5, 7 or 8 membered substituted or unsubstituted aromatic hydrocarbon radical;

Appl. No. 09/663,578
Atty. Docket No. 7882X
Amdt. dated July 25, 2003
Reply to Office Action of February 26, 2003
Customer No. 27752

(c) a 6 membered aromatic hydrocarbon radical wherein R is a linear or branched saturated or unsaturated, C₂ to C₃₀ aliphatic hydrocarbon radical;

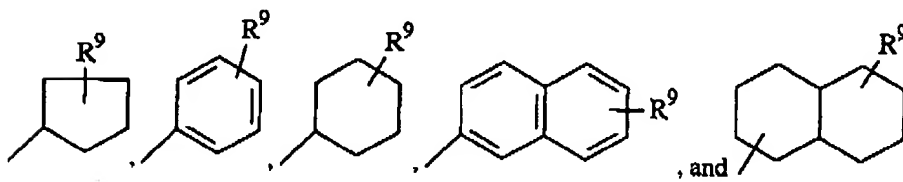
(d) a substituted or unsubstituted polycyclic aromatic hydrocarbon.

14. (presently amended) The compound as claimed in Claim 13 wherein X is selected from the group consisting of:



wherein each R⁹ is independently selected from the group consisting of hydrogen, linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic hydrocarbon or alkoxy radical having from about 1 to about 10 carbon atoms, or R⁹ is a saturated or unsaturated, substituted or unsubstituted, alicyclic or aromatic hydrocarbon radical having, from about [[1]] 3 to about 10 carbon atoms, which is fused to the ring; w is an integer from 1 to 3.

15. (presently amended) The compound as claimed in Claim 14 wherein X is selected from the group consisting of:



wherein R^9 is defined as above.

16. (withdrawn) A process for preparing an ether-capped poly(oxyalkylated) alcohol having the formula:



Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

wherein, R is selected from the group consisting of linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic hydrocarbon radicals having from about 1 to about 30 carbon atoms; R¹ may be the same or different, and is independently selected from the group consisting of branched or linear C₂ to C₇ alkylene in any given molecule; R² is selected from the group consisting of:

(i) a 7 to 13 membered substituted, or unsubstituted polycyclic ring;

(ii) a hydrocarbon of the formula:



wherein, y is an integer from 1 to 7, X is a 4 to 8 membered substituted, or unsubstituted, saturated or unsaturated cyclic or aromatic hydrocarbon radical; and

(iii) a hydrocarbon radical of the formula:



wherein R³ is selected from the group consisting of linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic hydrocarbon radicals having from about 1 to about 30 carbon atoms, provided that when R³ is methyl, R is branched;

wherein x is a number from 1 to about 30; comprising the steps of:

(a) providing an alcohol of the formula



wherein R² is as defined above;

(b) providing an alkoxylated alcohol of the formula



wherein R, R¹, and x, are as defined above;

(c) reacting said alcohol with said alkoxylated alcohol in the presence of a catalyst to form said ether-capped poly(oxyalkylated) alcohol.

17. (withdrawn) The process as claimed in Claim 16 wherein R is selected from the group consisting of linear or branched, aliphatic hydrocarbon radicals having from about 7 to about 11 carbon atoms; R¹ is CH₂CH₂; x is a number from 6 to about 10; and R² is selected from the group consisting of a hydrocarbon radical of the formula:



wherein R³ is selected from the group consisting of linear or branched, aliphatic radicals having from about 2 to about 5 carbon atoms.

Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

18. (withdrawn) The process as claimed in Claim 16 wherein said catalyst is selected from the group consisting of mineral acids, sulfonic acids and their salts.
19. (withdrawn) The process as claimed in Claim 16 wherein said catalyst is selected from the group consisting of p-toluenesulfonic acid, methanesulfonic acid, polymeric catalysts, TiCl_4 , TiCl_2 , $\text{Ti}(\text{O}^i\text{Pr})_4$, ZnCl_2 , ZnCl_4 , SnCl_4 , AlCl_3 , $\text{BF}_3\text{-OEt}_2$, AMBERYLST®15, DOWEX 50X8-50, and mixtures thereof.
20. (withdrawn) The process as claimed in Claim 16 wherein said step of reacting of alcohol with alkoxyated alcohol is conducted in the presence of a solvent wherein said solvent is selected from the group consisting of benzene, toluene, dichloromethane, tetrahydrofuran, diethylether, methyl tert-butylether, and mixtures thereof.
21. (withdrawn) The process as claimed in Claim 16 wherein said step of reacting alcohol with alkoxyated alcohol is conducted as a temperature of from about -20°C to about 300°C .
22. (withdrawn) The process as claimed in Claim 16 wherein said step of reacting alcohol with alkoxyated alcohol is conducted in the absence of a solvent.
23. (withdrawn) A process for preparing an ether-capped poly(oxyalkylated) alcohol having the formula:



wherein, R, R^1 , and x are as defined above; R^2 is selected from the group consisting of:

- (i) a 4 to 8 membered substituted, or unsubstituted heterocyclic ring containing from 1 to 3 hetero atoms;
- (ii) a 7 to 13 membered substituted, or unsubstituted polycyclic ring;
- (iii) a hydrocarbon of the formula:



wherein, y is an integer from 1 to 7, X is a 4 to 8 membered substituted, or unsubstituted, saturated or unsaturated cyclic or aromatic hydrocarbon radical; and

- (iv) a hydrocarbon radical of the formula:



Appl. No. 09/663,576
 Atty. Docket No. 7882X
 Amdt. dated July 25, 2003
 Reply to Office Action of February 26, 2003
 Customer No. 27752

wherein R^3 is selected from the group consisting of linear or branched, saturated or unsaturated, substituted or unsubstituted, aliphatic or aromatic hydrocarbon radicals having from about 1 to about 30 carbon atoms, provided that when R^3 is methyl, R is branched;

wherein x is a number from 1 to about 30; comprising the steps of:

- (a) providing an alpha-olefin
- (b) providing an alkoxyated alcohol of the formula

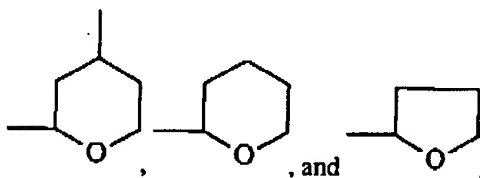


wherein R, R^1 , and x are as defined above;

- (c) reacting said alkoxyated alcohol with said alpha-olefin to form said ether-capped poly(oxyalkylated) alcohol.

24. (withdrawn) The process as claimed in Claim 23 wherein R is a 4 to 8 member substituted, or unsubstituted heterocyclic ring containing from 1 to 3 hetero atoms.

25. (withdrawn) The process as claimed in Claim 23 wherein said heterocycle is selected from the group consisting of:



25. (withdrawn) The process as claimed in Claim 23 wherein R is selected from the group consisting of linear or branched, aliphatic hydrocarbon radicals having from about 7 to about 11 carbon atoms; R^1 is CH_2CH_2 ; x is a number from 6 to about 10; and R^2 is selected from the group consisting of a hydrocarbon radical of the formula:



wherein R^3 is selected from the group consisting of linear or branched, aliphatic radicals having from about 2 to about 5 carbon atoms.

26. (withdrawn) The process as claimed in Claim 23 wherein said step of reacting of alpha-olefin with alkoxyated alcohol is conducted in the presence of a catalyst.

Appl. No. 09/663,576
Atty. Docket No. 7882X
Amdt. dated July 25, 2003
Reply to Office Action of February 28, 2003
Customer No. 27752

27. (withdrawn) The process as claimed in Claim 26 wherein said catalyst is selected from the group consisting of mineral acids, carboxylic acids, sulfonic acids, sulfinic acids, halogenated carboxylic acids, pyridinium *p*-toluenesulfonate, polymeric catalysts, TiCl_4 , $\text{Ti}(\text{O}^i\text{Pr})_4$, ZnCl_2 , SnCl_4 , AlCl_3 , $\text{BF}_3\text{-OEt}_2$, AMBERYLST@15 and mixtures thereof.
28. (withdrawn) The process as claimed in Claim 26 wherein said catalyst is selected from the group consisting of acetic acid, oxalic acid, glycolic acid, citric acid, tartaric acid, glycolic acid, maleic acid, oxydisuccinic acid, trifluoroacetic acid, heptafluorobutyric acid, dichloroacetic acid, trichloroacetic acid, *p*-toluenesulfonic acid, *p*-toluenesulfinic acid, methanesulfonic acid, 4-bromobenzenesulfonic acid, naphthalenesulfonic acid, (+)-10-camphorsulfonic and isomers, alkylbenzenesulfonic acid, xylenesulfonic acid, cumenesulfonic acid and mixtures thereof.
29. (withdrawn) The process as claimed in Claim 23 wherein said step of reacting of alpha-olefin with alkoxylated alcohol is conducted in the presence of a solvent, wherein said solvent is selected from the group consisting of benzene, toluene, dichloromethane, tetrahydrofuran, diethylether, methyl tert-butylether, and mixtures thereof.
30. (withdrawn) The process as claimed in Claim 23 wherein said step of reacting alpha-olefin with alkoxylated alcohol is conducted as a temperature of from about -20°C to about 300°C .
31. (withdrawn) The process as claimed in Claim 23 wherein said step of reacting alpha-olefin with alkoxylated alcohol is conducted in the absence of a solvent.
- ~~32. (canceled) An ether capped poly(oxyalkylated) alcohol prepared according to the process of Claim 16.~~
- ~~33. (canceled) An ether capped poly(oxyalkylated) alcohol prepared according to the process of Claim 23.~~
34. (presently amended) A detergent composition comprising an ether-capped poly(oxyalkylated) alcohol prepared according to the process of Claim 16 Claim 1.

Appl. No. 09/663,576
Atty. Docket No. 7882X
Amdt. dated July 25, 2003
Reply to Office Action of February 28, 2003
Customer No. 27752

~~35-(canceled) A detergent composition comprising an ether capped poly(oxyalkylated) alcohol
prepared according to the process of Claim 23.~~